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(54) Title: PROCESS FOR THE PREPARATION OF 1,1,1,3,3-PENTAFLUOROPROPANE AND 1,1,1,2,3-PENTAFLUOROPROPANE

(57) Abstract: A process is disclosed for the manufacture of $\text{CF}_3\text{CH}_2\text{CHF}_2$ and $\text{CF}_3\text{CHFCH}_2\text{F}$. The process involves (a) reacting hydrogen fluoride, chlorine, and at least one halopropene of the formula $\text{CX}_3\text{CCl}=\text{CClX}$ (where each X is independently F or Cl) to produce a product including both $\text{CF}_3\text{CCl}_2\text{CClF}_2$ and $\text{CF}_3\text{CClFCCl}_2\text{F}$; (b) reacting $\text{CF}_3\text{CCl}_2\text{CClF}_2$ and $\text{CF}_3\text{CClFCCl}_2\text{F}$ produced in (a) with hydrogen to produce a product including both $\text{CF}_3\text{CH}_2\text{CHF}_2$, and $\text{CF}_3\text{CHFCH}_2\text{F}$; and (c) recovering $\text{CF}_3\text{CH}_2\text{CHF}_2$ and $\text{CF}_3\text{CHFCH}_2\text{F}$ from the product produced in (b). In (a), the $\text{CF}_3\text{CCl}_2\text{CClF}_2$ and $\text{CF}_3\text{CClFCCl}_2\text{F}$ are produced in the presence of a chlorofluorination catalyst including a ZnCr_2O_4 /crystalline α -chromium oxide composition, a ZnCr_2O_4 /crystalline α -chromium oxide composition which has been treated with a fluorinating agent, a zinc halide/ α -chromium oxide composition and/or a zinc halide/ α -chromium oxide composition which has been treated with a fluorinating agent.



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